REMARKS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-7 and 9-24 are pending, with claims 1, 9, 14 and 18 amended, and claim 8 cancelled without prejudice or disclaimer by the present amendment. Claims 1, 14 and 18 are independent.

In the Official Action, claims 1-3, 11, 14-15 and 18 were rejected under 35 U.S.C. § 102(b) as being anticipated by Belaid ("Item Searching in Forms..."); claim 4 was rejected under 35 U.S.C. § 103(a) as being obvious in view of Belaid and Abdel-Mottaleb (U.S. Patent No. 6,263,113); claims 5, 10, 17 and 20 were rejected under 35 U.S.C. § 103(a) as being obvious in view of Belaid and Antonacopoulos ("Flexible Page Segmentation Using the Background"); claim 6 was rejected under 35 U.S.C. § 103(a) as being obvious in view of Belaid, Antonacopoulos and Katsuyama (U.S. Patent No. 6,226,402); claim 7 was rejected under 35 U.S.C. § 103(a) as being obvious in view of Belaid, Antonacopoulos and McLeod (U.S. Patent No. 5,778,092); claims 8-9 were rejected under 35 U.S.C. § 103(a) as being obvious in view of Belaid, Antonacopoulos and Huang (U.S. Patent No. 5,416,849); claims 12-13 and 16-17 were rejected under 35 U.S.C. § 103(a) as being obvious in view of Belaid and Sakai (U.S. Patent No. 5,949,555); claim 19 was rejected under 35 U.S.C. § 103(a) as being obvious in view of Belaid and Mahoney (U.S. Patent No. 6,470,095); and claims 22-24 were rejected under 35 U.S.C. § 103(a) as being obvious in view of Belaid and Antonacopoulos.

Claim 1 is amended to recite features from now-cancelled claim 8 as well as other features from Applicants' specification (e.g., paragraphs [032] and [035]). Claims 14 and 18 are

similarly amended. Claim 9 is amended to maintain antecedent basis. Claims 17 and 23 are amended to correct antecedent basis informalities noted by Applicants. No new matter is added.

In view of the incorporation of features from now-cancelled claim 8 into independent claims 1, 14 and 18, the rejections of claims 1, 14 and 18 are moot. The following comments will address the rejection of now-cancelled claim 8.

Briefly recapitulating, amended claim 1 is directed to

> A method of segmenting a composite image of pixels into a number of fields corresponding to lay-out elements of the image, the pixels having a value representing the intensity and/or color of a picture element, the method comprising:
>
> analyzing the pixels of the image as either background pixels having a background property indicative of a background of the image or foreground pixels not having said background property;
>
> detecting in the image any foreground separator elements that are objects in the foreground of the image having a pattern of foreground pixels;
>
> replacing the pixels of the detected foreground separators by pixels having the background property;
>
> constructing separating elements corresponding to rectangular areas of adjacent pixels of the image having the background property; and
>
> constructing a graph representing the lay-out elements of the image by
>
> - defining vertices of the graph on the basis of intersections of separating elements that are substantially oriented in predetermined separation directions,
>
> - defining edges of the graph between the vertices corresponding to the separating elements, and
>
> - defining field separators corresponding to the edges of the graph.

Claims 14 and 18 are directed to a computer program product and a device substantially corresponding to the method of claim 1.

Belaid describes a method for locating items in a form whose boundaries are lines without using any *a priori* information about the form. Lines are detected using a Hough transform followed by searching cycles, corresponding to cell locations, in a graph. In Belaid, items are separated by lines of different aspects. Cells containing items can have a background (e.g., gray or black) and lines that correspond to cell boundaries. However, contrary to the Official Action, Belaid does not disclose or suggest "constructing separating elements corresponding to rectangular areas of adjacent pixels of the image having the background property" as recited in the independent claims. That is, the background of Belaid is related to items *in* the cells and the lines are *around* the cells.

Furthermore, as acknowledged by the Official Action, Belaid (and Antonacopoulos) do not disclose or suggest replacing the pixels of the detected foreground separators by pixels having the background property, as recited in the independent claims. To cure this deficiency, the Official Action applies Huang. Huang describes a method for field extraction of scanned images of document forms. FIG. 3 of Huang shows the field image 16' for the first name field as it appears on the document image of FIG. 2C. The field image 16' is shown with the surrounding box 17, the characters 18 and the spurious lines 19 and 19a. In the process of field extraction, the image of the box 17 is removed. In addition, in the process of extraneous line removal, the image of the extraneous line 19a is eliminated, because a portion of the image lies outside the pre-defined area of the field 16'. However, for this example, the extraneous lines 19 have not been removed from the image 18 of the characters in the field 16', as can be seen in the resulting extracted field 16" of FIG. 3. The extracted field image 16" will appear on the extracted field images 10" of FIG. 2D for the form.

However, Huang (as well as Belaid and Antonacopoulos) do not disclose or suggest a) analyzing the pixels of the image as either a1) background pixels having a background property indicative of a background of the image or a2) foreground pixels not having said background property; b) detecting in the image any foreground separator elements that are objects in the foreground of the image having a pattern of foreground pixels; and c) replacing the pixels of the detected foreground separators by pixels having the background property.

Applicants have considered the remaining applied references and submit these references do not cure the deficiencies of Belaid, Antonacopoulos and Huang. As none of the cited art, individually or in combination, discloses or suggests at least the above-noted features of independent claims 1, 14 and 18, Applicants submit the inventions defined by claims 1, 14 and 18, and all claims depending therefrom, are not rendered obvious by the asserted references for at least the reasons stated above.[1]

[1] MPEP § 2142 "...the prior art reference (or references when combined) must teach or suggest all the claim limitations.

REMARKS

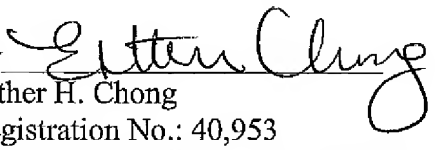
In view of the above amendment, Applicants believe the pending application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Michael E Monaco (Reg. No. 52,041) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.147; particularly, extension of time fees.

Dated: October 15, 2008

Respectfully submitted,

By 

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